REMARKS

This paper is being provided in response to the Office Action mailed March 28, 2003, for the above-referenced application. In this response, Applicant has amended claims 1, 6, 7 and 8 to correct a typographical error in order to clarify that which Applicant considers to be the invention. Applicant respectfully submits that the amendments to the claims are supported by the originally-filed specification.

The rejection of claims 1-8 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,191,416 to Dickson et al. (hereinafter "Dickson") in view of U.S. Patent No. 6,493,041 to Hanko et al. (hereinafter "Hanko") is hereby traversed and reconsideration is respectfully requested.

Applicant's independent claim 1, as amended herein, recites a dot display type video display apparatus displaying an image having a first frame frequency at a second frame frequency that is lower than the first frame frequency. A synchronization signal generation circuit generates a synchronization signal of the second frame frequency. A conversion frequency detector calculates a number of frames making up a unit block at each of the frame frequencies and a number of frames to be thinned based on the first frame frequency and the second frame frequency. A frame memory stores a first frame having the first frame frequency. A difference detector compares intensity data of each dot of a second frame which is currently input to the video display apparatus with intensity data of each dot of the first frame which is stored in the frame memory immediately before the second frame and detects a difference between the two frames. A difference adder counts a number of dots for a case in which the

difference of the intensity data detected by the difference detector is greater than a prescribed value. A movement detection/judgment section distinguishes whether or not a count value detected by the difference adder is below a prescribed value and outputs a signal indicating that thinning of the second frame is possible, when the count value of the difference adders if below the prescribed value. A frame thinning section is included for thinning the second frame in a case in which the signal indicating that frame thinning of the frame is possible is output from the movement detection/judgment section and also a signal indicating the number of frames to be thinned is output from the conversion frequency detector. Claims 2-5 depend directly or indirectly on independent claim 1.

Applicant's independent claim 6, as amended herein, recites a dot display type video display apparatus having substantially the elements as in claim 1, including a frame thinning section as described above and further including a frame thinning stopping section. The frame thinning stopping section stops the frame thinning operation of the frame thinning section within a current block including the first frame and the second frame. The stopping occurs in a case in which, if, as a result of an execution of frame thinning by the frame thinning section, a total number of thinned frames has reached the number of frames to be thinned which is output from the conversion frequency detector.

Applicant's independent claim 7, as amended herein, recites a plasma display apparatus displaying an image having a first frame frequency and a second frame frequency that is lower than the first frame frequency. The apparatus substantially includes the elements as described with respect to claims 1 and 6, including a frame thinning section as described above.

Applicant's independent claim 8, as amended herein, recites a display method for a dot display type video display apparatus having elements as described with respect to claim 1, including a frame thinning section as described above. The method includes the step of comparing the intensity data of the first frame with that of the second frame. The second frame is thinned when the intensity data of the two frames are the same. The frame thinning operation is stopped within a current block including the first frame and the second frame. The stopping operation occurs in a case in which, as a result of an execution of frame thinning, a total number of thinned frames has reached the number of frames to be thinned, which is output from the conversion frequency detector.

The Dickson reference discloses an image processing system for converting a convention low-resolution video signal to a format suitable for transfer to high-resolution film, while preserving the realistic effects of any motion represented in the original video signal. Interpolation and comparison of video fields are utilized to generate background frames by the interlacing of original fields as controlled by difference information determined between interpolated fields. (See Abstract, Figure 4 and col. 7, line 65-col. 8 line 26).

The Hanko reference discloses a method and apparatus for detection motion in video in which frames from an incoming video stream are digitized and compared with a reference frame. In comparing a current frame with the reference frame, a difference count for the current frame generated by a pixel difference counter is compared to the motion detection criteria used by the system to determine whether motion has occurred. A new reference frame is determined upon

the occurrence of the first frame for which no motion has been detected after a frame for which motion has been detected. A motion floor value is recalculated based on the amount of motion exhibited in the current frame, the pixel difference counter is zeroed, and processing begins again by digitizing the next frame of a video stream. (See Abstract, Figure 4, and col. 10, lines 18-46).

Applicant's independent claims all recite the feature of *a frame thinning section for thinning the second frame*, in a case in which *a signal indicating that frame thinning of the second frame is possible* is output from the movement detection/judgment section and also *a signal indicating the number of frames to be thinned* is output from the conversion frequency detector. As shown in Fig. 3 and on page 10, line 24 - page 11, line 16, Applicant provides that the number of frames in one block required for vertical frequency conversion can be judged to be five frames before conversion and four frames after conversion, respectively, enabling calculation of the number of frames to be thinned. The movement detection/judgment section outputs to the frame thinning section a signal which indicates that it is possible to thin the frame (for example, frame B' as shown in Fig. 3). The frame thinning section, based on the signal from the movement detection/judgment section and the signal from the conversion frequency detector, which indicates the number of frames to be thinned, executes processing for thinning the frame (B'). Thus, the thinning of just the required number of frames is enabled at all times and the occurrence of non-continuities in a moving image is reduced.

Applicant respectfully submits that neither Dickson nor Hanko, taken alone or in combination, teach or suggest at least the above feature as claimed by Applicant. Specifically, Dickson discloses a procedure for interpolating multiple fields from original fields. The multiple

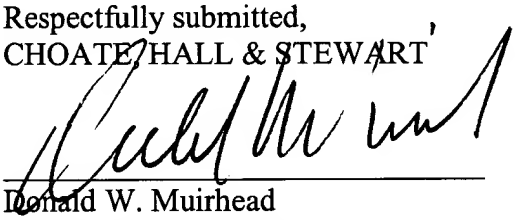
fields are compared with one another and for each pixel in the entire frame, the difference between an original pixel from one field and an interpolated pixel from the other field is generated. Dickson discloses discarding every fifth field regardless of its content and without any other input to yield two fields for each original film frame. (See col. 6, lines 6-11). Difference information is used to controllably modify a preliminary background frame, generated by interlacing two original video fields, that will include motion artifacts if any portion of the image has moved from the time of the first field to the time of the second field. (See Dickson, col. 6, lines 1-14 and col. 8, lines 4-19).

Hanko discloses the use of reference frames to compare with frames in which motion has been detected according to motion detection criteria. Upon the occurrence of a new frame having no motion detected after a frame for which motion has been detected, that frame is stored as a new reference frame that is then utilized for subsequent comparisons. (See Hanko, col. 10, lines 31-41). Arguably, neither Dickson nor Hanko disclose any frame thinning corresponding to a motion detection/judgment signal and a conversion frequency signal to reduce the occurrence of non-continuities in a moving image.

Applicant respectfully submits that neither Dickson nor Hanko teach or suggest the feature of *a frame thinning section for thinning the second frame*, in a case in which *a signal indicating that frame thinning of the second frame is possible* is output from the movement detection/judgment section and also *a signal indicating the number of frames to be thinned* is output from the conversion frequency detector, as is claimed by Applicant. Accordingly, Applicant respectfully request that this rejection be reconsidered and withdrawn.

Based on the above, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-248-4038.

Respectfully submitted,
CHOATE, HALL & STEWART



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Date: June 23, 2003

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